Data Standards Strategy – Action Plan

Version: 1.4

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REVISION HISTORY

Version Number	Implemented By	Revision Date	Description of Change
1.0	CDER DSPB	February 21, 2013	Initial Document
1.1	CDER OpSC	July 29, 2013	Quarterly Update
1.2	CDER OpSC	October 23, 2013	Quarterly Update
1.3	CDER OpSC	February 5, 2014	Quarterly Update
1.4	CDER OpSC	May 30, 2014	Quarterly Update

Table of Contents

Tables

Figures

1.0 Introduction

In 2010, the Data Standards Program Board (DSPB) was chartered to serve as the governing body for the Center for Drug Evaluation and Research (CDER) data standards initiatives. In this capacity, the DSPB oversees a portfolio of projects to deliver to its internal and external stakeholders. This action plan outlines the data standards initiatives under the authority of the DSPB. These initiatives are directly aligned with the CDER Data Standards Strategy, which is currently under revision and will be published in 2014 and, where applicable, to published Information Technology (IT) plans. CDER's DSPB interfaces closely with standards teams in other centers, collaborating on projects and direction wherever feasible.

2.0 Purpose

This Action Plan is a quarterly update to internal and external stakeholders with an overview and progress update of current CDER data standards initiatives. The plan will continue to be updated quarterly to indicate progress of current projects as well as initiation of new projects.

3.0 Program Initiatives

The initiatives in the CDER DSPB portfolio align with the Center's data standards strategic goals. For purposes of this plan, the goals are categorized in following manner:

1. **Policy and Process** – Key activities to establish critical data standards-related policy or process (e.g., standards development and adoption, guidance development process and schedule, other specific guidance).
2. **Standards Development and Implementation** – Projects to identify, develop, test, and implement a standard to meet regulatory needs
3. **Study Data Standards** – Projects that develop, test, or implement advancements in study data terminology and content standards.
4. **Research and Development** – Projects to assess a potential approach to meet a standards-related need without immediate intent to implement; these are to inform of future direction.

A. Policy and Process

The Data Standards Strategy outlines policy and process initiatives to support CDER's data standards goals. The projects commenced to address the outlined policy and process initiatives are in **Table 1**. The progress arrows in the table indicate the current stage of progress for each project. **See Table 5** for a description of the stages.

Guidance and other technical resource guide documents follow a process that includes: development, clearance, and publication, for public comment, in the Federal Register. This process is aligned with Good Guidance Practices (GGP) for issuing guidances as described in 21 Code of Federal Regulations (CFR) 10.115.

B. Standard Development and Implementation

CDER is implementing a consistent approach for its standards requirements, development and implementation projects. An overview of the development framework is provided in the Appendix. The framework is intended to be flexible to accommodate diverse standards needs, ranging from simple vocabulary change requests, to changing existing standards, to actual implementation of new standards.

Further details regarding study data-specific projects are outlined in Section C. **Table 2** highlights current standards projects. Not all projects go through each stage, when not applicable, the stage is grayed out. **See Table 6** for a description of the stages.

C. Study Data Standards

This section elaborates the Data Standard Project *Development* Stage for a study data standard. These projects are categorized separately from other data standards efforts because it is expected that most will be incremental enhancements to existing standards. For example, as discussed in the Data Standards Strategy document, it is expected that therapeutic area standards development will enhance existing "cross-cutting" Clinical Data Interchange Standards Consortium (CDISC) domains (e.g., demographics, adverse events, vital signs) and potentially add small therapeutic area (TA) -specific sets of elements and relationships. The Appendix describes the process overview and the FDA's roles/activities in the development of study data standards.

Generally, study data standard development projects are led by organizations external to FDA (e.g., CDISC, Coalition for the Advancement of Standards and Therapies (CFAST[1]), Critical Path Institute, Duke Clinical Research Institute (DCRI)). This enables CDER to meet one of its strategic goals: to support open, consensus-based data standards development. To ensure that those standards can be implemented for regulatory review purposes, CDER participates at critical junctures throughout the development phase to identify scope and requirements, provide subject matter expertise and feedback, and to perform acceptance and implementation testing. When a standard is released by a Standards Development Organization (SDO) it may be available for use, but it is not necessarily supported by FDA. Following the release by a SDO, FDA will execute an acceptance testing process to determine whether it is able to support the standard. When FDA determines that a standard can be supported, FDA will publish a *Federal Register* notice announcing support for the new standard and will update the Data Standards Catalog. CDER is not a passive stakeholder and participates on many levels to influence project scope (e.g., through requirements development and expert reviews), promote timely progress, and prioritize projects through participation in steering groups (e.g., CFAST) and leadership support in relevant HL7 working groups.

A list and status of projects addressing therapeutic areas are available online at: http://www.fda.gov/Drugs/DevelopmentApprovalProcess/FormsSubmissionRequirements/ElectronicSubmissions/ucm287408.htm. **Table 3** highlights related projects that are not on the

[1] http://www.cdisc.org/therapeutic

therapeutic area standards development list. Not all projects go through each stage, when not applicable, the stage is grayed out. **See Table 6** for a description of the stages.

D. Research and Development

The process for research and development initiatives is similar to that of other data standards development efforts. To ensure that CDER's standardization needs are met in the long term, research and development initiatives are undertaken to assess new approaches without immediate intent to implement, but rather to inform future decisions.

Over the past few years, CDER has increased its support for standardized study data submissions using CDISC standards, and will continue to do so in the foreseeable future. On November 5, 2012, FDA coordinated the Solutions for Study Data Exchange Standards Meeting to solicit input from industry, technology vendors, and other members of the public regarding the advantages and disadvantages of current and emerging solutions for the exchange of regulatory study data. Based on that input, FDA has begun to evaluate potential study data exchange alternatives. The results will inform further pilot activities in this area. In November 2013 CDER and the Center for Biologics Evaluation and Research (CBER) published a *Federal Register* notice announcing a project to evaluate, with public input, the CDISC Study Data Set (SDS) XML transport format for the exchange of study data in regulatory submissions. This evaluation will occur in 2014.

CDER is also exploring the use of Semantic Web Technologies for modeling requirements. Semantic Web technology may help support evolving models implemented by multiple stakeholders, through its potential to enable the development of bottom-up standards that can be harmonized at any level as needed.

Table 1. Policy and Process

Project Title	Center	Project Description	Output and Estimated Timeframes	Stage			
				Initiation	Development	Clearance	Publication
*Guidance on Electronic Submission of Applications (eCTD)	CDER CBER	Issue revised draft Guidance to industry specifying the required format for electronic regulatory submission.	Draft guidance to publish in the Federal Register for public comment in FY2014			2nd draft	
Guidance for Industry Providing Regulatory Submissions in Electronic Format – Submissions Under Section 745A(a) of the Federal Food, Drug, and Cosmetic Act	CDER CBER	Issue draft Guidance to industry specifying on how FDA intends to implement the electronic submission requirements of section 745A(a) of the FD&C Act.	Draft guidance published in the Federal Register February 6, 2014. FDA reviewing public comments			1st draft	
Guidance on Electronic Standardized Study Data (eStudy)	CDER CBER	Issue revised draft Guidance to industry specifying requirements for electronic submission of standardized study data under the Food and Drug Administration Safety and Innovation Act (FDASIA).	Draft guidance published in the Federal Register February 6, 2014. FDA reviewing public comments			2nd draft	
Study Data Standards Technical Conformance Guide	CDER CBER	The Study Data Technical Conformance Guide, when final, supplements the revised draft guidance for industry Providing Regulatory Submissions in Electronic Format--Standardized Study Data (eStudy Data guidance) by providing technical specifications, recommendations, and general considerations on how to submit standardized electronic study data using FDA-supported data standards identified in the Data Standards Catalog.	Draft guidance published in the Federal Register February 6, 2014. FDA reviewing public comments			1st draft	

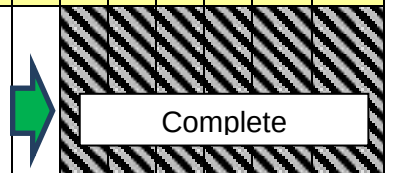
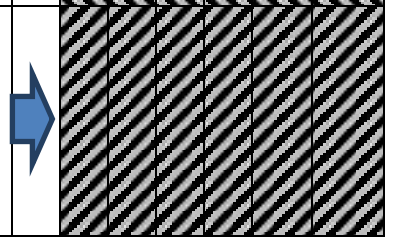
Project Title	Center	Project Description	Output and Estimated Timeframes	Stage			
				Initiation	Development	Clearance	Publication
Therapeutic Area Standards Initiative Project Plan, version 2.0	CDER CBER	Update the TA Project Plan based on Public comment and progress.	Publish TA Project Plan update in late FY2014	draft			
Draft Guidance for Industry; Providing Regulatory Submissions in Electronic Format--Submission of Manufacturing Establishment Information	CDER CBER	Issue draft Guidance in FY 2014 for the submission of electronic information about manufacturing establishments. Guidance is a collaborative effort with CBER. Working group involves, CBER/Office of the Associate Director for Review Management, CDER/Office of Compliance (OC), ONDQA (Office of New Drug Quality Assessment), OGD (Office of Generic Drugs), OBP (Office of Biotechnology), ORP (Office of Regulatory Policy), Office of Business Informatics (OBI).	Draft guidance ready to publish in the Federal Register for public comment in FY2014. Currently undergoing FDA Technical review		draft		
Draft Guidance for Industry Providing Submissions in Electronic Format-Summary Level Clinical Site Data for CDER's Inspection Planning	CDER	Provide guidance to industry on site-level standardized data elements used in the selection clinical sites and/or facilities for inspection as part of a regulatory application or supplement.	Comments received from December 2012 draft release are being addressed and near completion		2nd draft		

*At this time FDA has not issued final guidance on the requirement for standardized study data or electronic submissions. Draft guidances, including the draft Study Data Technical Conformance Guide, in accordance with section 745A(a) of the Food Drug and Cosmetic Act which provides for the requirement of electronic submissions in specified formats, were published on February 6, 2014.

Table 2. Standard Development and Implementation

Project Title	Center	Project Description	Output and Estimated Timeframes	Stage						
				Req Definition	Alt Analysis	Development	Testing	Adoption	Implementation	FRN[2]/ Guidance
eCTD v4.0 Project	CDER CBER	FDA currently uses electronic Common Technical Document (eCTD) version 3.2. This project is to support the development, testing, and adoption of the next major version of the eCTD (version 4) which includes two-way communication.	Addressing HL7 Regulated Product Submission (RPS) Normative Ballot comments with the goal of re-balloting in FY 2014 Q4							
ISO IDMP Implementation	CDER CBER	Implement International Organization for Standardization (ISO) Identification of Medicinal Products (IDMP) standards with reliable and robust repositories and processes to support efficient, consistent, and timely decision making in the regulation of medicinal product throughout the product development lifecycle.	ISO 11238 based Substance Registration System (SRS) Pilot to start in FY2014 Q3							
Product Dictionary	CDER CBER	Note: This Product Dictionary is not a standard in development rather it is an implementation of a controlled dictionary utilizing standards. With the release of the FDA Adverse Event Reporting System (FAERS) in FY2013 Q1, the initial implementation of the product dictionary is complete. The Centers are now focusing on the next version of the product dictionary that will leverage an ongoing CDER Master Data Management effort to create an ISO IDMP compliant Product Dictionary. This project is current in the planning stages.	Contract awarded FY2014 Q1. Currently in the development phase. Validated data elements against ISO 11615 standard							

[2] Federal Register Notice (FRN)

Project Title	Center	Project Description	Output and Estimated Timeframes	Stage
Generic Drug Review Data Standards and Process Optimization	CDER	Assess current data standards, flow, and associated processes for Office of Generic Drugs. Establish and implement recommendations to optimize future state processes to meet Generic Drug User Fee Act (GDUFA) requirements. Note: This effort is a precursor to new standards development project.	Project scope and plan completed and approved FY2014 Q1. Current State assessment complete	
CMC Data Standardization	CDER	Establishing common drug quality data standards continues to provide new opportunities to transform the submission data into useful information to potentially improve time and quality of FDA's drug review process. Standardized data elements, terminologies, and data structures enable automation of important analyses of CMC data to support more efficient and effective regulatory decision-making.	Working group established. Project scope for phase I defined	

Req Definition | Alt Analysis | Development | Testing | Adoption | Implementation | FRN[2]/ Guidance

Project Title	Center	Project Description	Output and Estimated Timeframes	Stage						
				Req Definition	Alt Analysis	Development	Testing	Adoption	Implementation	FRN[2]/ Guidance
[3]ICH E2B R3 Implementation Assessment and Planning	CDER	Assess Individual Case Safety Report (ICSR) implementation requirements and considerations; develop implementation plan based on assessment findings.	FR Notice for the FDA ICH E2B(R3) Implementation Guide and Backward and Forward Compatibility guide published on February 21, 2014. Technical spec under revision and expected to be available in FY2014 Q4. Project pilot to review sample E2B(R3) XML files scheduled for FY2015 Q2			draft				
Data Fit Project	CDER	Develop an advanced data quality and conformance checking program (i.e., Data Fit service) for use by CDER to evaluate and report on clinical trial data that is submitted in standard format in support of registration applications.	Program testing completed FY 2014 Q1. Estimate integration completion by FY 2014 Q3							

[3] CBER vaccine program has completed various activities including Electronic Vaccine Adverse Event Reporting System (eVAERS) guidance and technical specification, Phase I parser development and testing, and Electronic Submissions Gateway (ESG) enhancements to support ICSR exchange with Centers for Disease Control and Prevention (CDC). The vaccine program is collaborating with the overarching CBER/CDER ICSR(R3) implementation but progressing at a different pace.

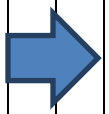
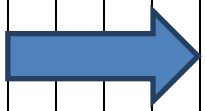
Project Title	Center	Project Description	Output and Estimated Timeframes	Stage						
				Req Definition	Alt Analysis	Development	Testing	Adoption	Implementation	FRN[2]/ Guidance
Facilities production/ distribution Standardization Project	CDER CBER	Improve submission requirements to ensure that essential facility location and production information is captured completely and in a form conducive to electronic receipt, storage and usage.	Detailed project plan completed. Assessing impact of project plan before initiation							

Table 3. Study Data Standard Development

Project Title	Center	Project Description	Output and Estimated Timeframes	Stage						
				Req Definition	Initiation	Development	Testing	Adoption	Implementation	FRN/Guidance
SEND Cardiovascular and Respiratory Safety Pharmacology Pilot	CDER	Pilot the Standard for Exchange of Nonclinical Data (SEND) data standard for cardiovascular and respiratory safety pharmacology study types.	Safety Pharm studies received are pending mapping and uploading for review							
[4]FDA Therapeutic Areas Data	CDER	Building on the work completed in the initial pilot to capture data requirements for review of clinical efficacy conducted in FY13, expanded requirements collection for additional 12 TAs.	Eight TAs currently in progress and nearing completion.							

[4]Formally titled: "TA Requirements Gathering & Small Clinical Information Models Development". Refer to Section 3 C for a link to the web site with the Table of Priority Therapeutic Area Standards.

Project Title	Center	Project Description	Output and Estimated Timeframes	Stage						
				Req Definition	Initiation	Development	Testing	Adoption	Implementation	FRN/Guidance
Standards Requirements			Four additional TAs to be initiated in late FY2014							
Data Standards Testing Methodology	CDER	Define testing approaches, test activities, timing and appropriate measurement criteria to enable FDA to assess standards usability in the review environment.	Initial draft of Testing and Acceptance SOP scheduled for review in FY2014 Q3. First pilot initiated (see "CDISC Dataset-XML Pilot"). Second pilot estimated to start in FY2014 Q3							
Impact Assessment and Transition Planning for Meaningful Use Standards	CDER	Assess impact of adopting and/or harmonizing with specific Office of National Coordinator's (ONC's) Meaningful Use standards.	First draft Impact Analysis report for LONIC and UCUM under revision							

Table 4. Research and Development

Project Title	Center	Project Description	Output and Estimated Timeframes
HL7 Study Data Standards Project	CDER	Conduct a proof of concept (POC) to test the use of HL7 v.3 xml messages and/or documents (e.g., Clinical Document Architecture (CDA)) as a possible exchange method for certain	Phase 2 – Testing Structured Protocol Information complete. Test report published. Further work in this area will

Project Title	Center	Project Description	Output and Estimated Timeframes
		use cases (e.g. patient narrative, clinical investigator information, study design, subject data). The project includes drafting implementation guides and conducting testing.	be in collaboration with other groups with similar projects or solutions (e.g., Transcelerate)
CDISC Dataset-XML Pilot	CDER CBER	FDA envisions several pilot projects conducted to evaluate new transport formats. The purpose of this pilot project is to obtain additional experience with CDISC Dataset XML. A successful pilot may allow CDER and CBER to routinely receive study data that employ CDISC Dataset XML as the transport format.	Evaluation pilot project began in FY 2014 Q2. Six sponsors participating and will submit datasets in FY2014 Q3. Testing to initiate in FY2014 Q4. FR Notice to communicate pilot results will be published after pilot completion

Table 5. Policy and Process Project Stages

Policy and Process Project Stage	Center	Stage Description
Initiation	CDER CBER	The business need is articulated and a work plan for the project is developed.
Development	CDER CBER	During this stage the proposed new or changed policy/process is developed and a draft of the new/revised policy or process is created and internally reviewed by subject matter experts. Once complete, the document will begin the clearance process.
Clearance	CDER CBER	This is a formal process whereby a guidance document is reviewed for consistency with CDER policy, Good Guidance Practices, format, style, clarity and content. The review is conducted by leadership at the office and center levels prior to submission and review at the Agency level and subsequent publication.
Publication	CDER CBER	For guidance and other external documents having policy impact, a notice of availability is published in the Federal Register and the document is made accessible to internal and external stakeholders. For internal processes, publication is made as a CDER Manual of Policies and Procedures (MaPPs) if appropriate.

Table 6. Standard Development Project Stage and Description

Rows highlighted in yellow* are processes owned by Standards Development Organizations, other rows are CDER owned process. As discussed in the next section, there is variation in all data standards projects so not all processes are needed for every project.

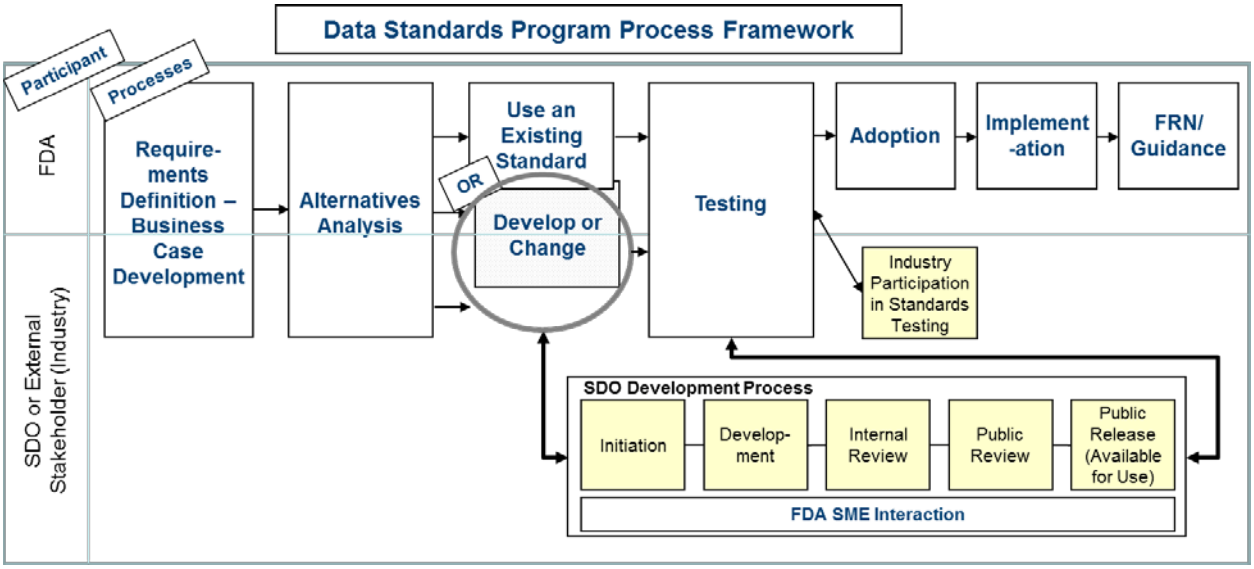
Data Standard Project Stage	Stage Description
Requirements Definition - Business Case Development	A business case is developed that can include a description of the data standard need, impact on tools, processes, and information technology infrastructure, high-level concept of operations, future state benefits, and high level requirements. For study data-related projects, FDA subject matter experts and document resources (e.g., case report forms, guidance documents) are used to develop requirements for study data standards development.
Alternatives Analysis	If needed, FDA can conduct alternative analyses to assess options and recommendations for addressing the data standards need defined in the business case. Stakeholder input is a critical part of this effort and could include a request for public comment or input in addition to planned communications (as outlined in the Communication Plan).
Alternatives Analysis - Pilot	If needed, FDA would conduct a single option pilot to further assess the feasibility of a data standards alternative or a competitive pilot to compare more than one identified alternative that meets the business need.
Initiation*	The SDO, grantee, or other lead group working with the FDA and other subject matter experts defines the project scope (e.g., what is needed for regulatory review decision making), develops a charter to define the project and ensure available resources, develops a plan, and conducts a kick off of the project.
Development*	The SDO, grantee, or other lead group conducts an iterative process of data element identification (e.g., elements need to describe the study primary endpoint), definition, validation, and conducts a review with defined expert groups. FDA's subject matter experts participate throughout the development phase. A key output is an implementation guide for the study data standard.
Internal Review*	During this stage, the lead group conducts an internal review to ensure readiness for the public review period.
Public Review*	The lead group facilitates a public review comment period. Comments are addressed per the lead group's process.
Public Release*	An initial release of the study data standard is released for public use.
Testing	A project may be required to test that all identified factors are assessed (e.g., scale, impact, suitability for FDA regulatory review needs, compatibility with FDA infrastructure) and that all policy, regulatory, guidance, and technical specification needs are identified. For study data, FDA may use converted or sample data sets to test the study data standard to simulate regulatory review decision making. Having the business rules and/or conformance checks available for a new or updated

Data Standard Project Stage	Stage Description
	standard at time of SDO release will be important to FDA's testing efforts.
Adoption	If needed, policy, regulatory, guidance, and technical specification needs identified for a given data standards change are addressed to support implementation.
Implementation	The data standard change is being implemented into the FDA environment. This phase includes all the steps to make this part of the regulatory review process.
Federal Register Notice (FRN)/Guidance	FDA will issue Federal Register Notice (and guidance as needed) if the use of a new standard is required.

Appendix A. Standard Development and/or Implementation Project Stage Description

This section provides more detail on the processes utilized by the projects described in Section 3.0B and 3.0C. **Figure 1** illustrates the process framework CDER is implementing for its data standards identification, development and implementation projects. Depending on the scope, projects will proceed through the appropriate phases (i.e., not every project will proceed through all of the listed processes). For example, projects only capturing CDER's TA requirements will not proceed through Testing, Adoption, and Implementation. Those would be addressed in a subsequent project. Most processes in this framework require collaboration with external stakeholders, these are depicted as process boxes that cross between the FDA and SDO or External Stakeholder participant rows.

Figure 1. Data Standards Development Project High Level Process



Use of this approach ensures that identified data standards needs are articulated, reviewed and approved internally, external stakeholders are engaged, adequate testing is conducted, and that roll out is planned. The figure also illustrates the general development process utilized by external SDOs (shown with yellow boxes). As discussed in Section 3.0C, these projects are led by groups external to FDA (e.g., CDISC, Critical Path Institute) and FDA participates throughout the process to provide subject matter expertise. **Table 6** summarizes the definitions for each of the process stages in the framework.